



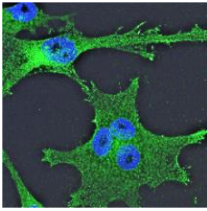
# Cancer mechanisms

- the role of membrane receptors

**Mette Madsen lab**

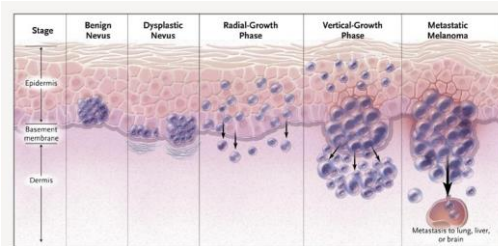
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## Understanding Advanced Melanoma Cancer

- Identification of novel biomarkers, improvement of diagnostic procedures, and development of innovative treatment regimens.

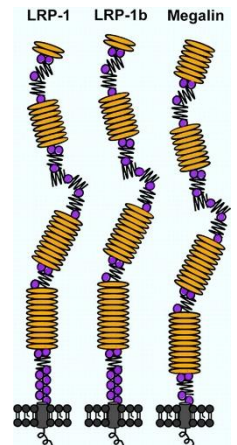
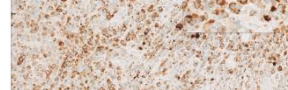


Miller and Mihm, NEJM 2006

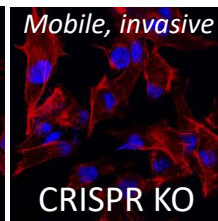
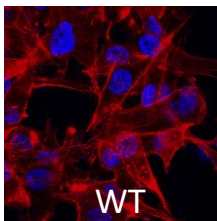
Primary melanoma labeled for megalin



Melanoma brain metastasis labeled for megalin



Bovenschen, Blood 2010.



Mobile, invasive

WT

CRISPR KO

We still lack effective treatment regimens for more than 50% of the patients with inoperable metastatic melanoma cancer.

## Project examples

- Investigations of the mechanisms priming and promoting dissemination of melanoma cancer to advanced stages.
- Identification of novel diagnostic biomarkers of metastasis in melanoma cancer.
- Development of alternative treatment regimens for metastatic melanoma cancer.

## Techniques

- We use a cell-based setup and human cancer cell lines; CRISPR/Cas9 knockout cell lines, and cell lines exposed to various physiologically relevant signalling molecules.
- **Molecular biology and biochemical techniques:** quantitative real time PCR, cloning, western blotting, adhesion assays, wound healing/scratch assays, invasion assays, immunofluorescence and confocal microscopy, internalization assays using iodinated ligands, chase of ligands and live-imaging, high-content screening and compartment analyses, cytokine stimulation of cell cultures and assessment of cancer cell differentiation status, drug delivery using monoclonal antibodies targeting membrane receptors.
- **Pathological techniques:** investigations of human tissue samples (both primary tumors and metastases) from patients with melanoma cancer using immunohistochemistry and digital pathology.

### Selected collaborators:

Pathologist and Professor Torben Steiniche, Dep. of Pathology, Aarhus University Hospital, Denmark  
 Oncologist Henrik Schmidt, Department of Oncology, Aarhus University Hospital, Denmark  
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